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M. FROIDEVAUX'S PARIS LETTER.

PARIS, November 21, 1901.

Having sketched in previous letters the history and the present organization of the Geographical Service of the Army, we have now to mention the works already accomplished and those now in progress under this active and important institution; so far, that is to say, as relates to the maps furnished to the public, and omitting entirely those known as *special*, which are executed for the particular requirements of the army.

Much the best-known work published by the Geographical Service is the map of France on the scale of 1:80,000, commonly known as the Map of the General Staff. Prescribed by royal order of August 6, 1817, to replace the Cassini map, which had become inadequate, the new map was begun April 1, 1818; the topographical work was completed in 1866 and the engraving not until 1882. The map comprises 273 sheets; it is periodically revised on the ground, and has been constantly kept up to date since 1889 by the Geographical Service.

To facilitate consultation and the handling of the map, the great sheets of 80 by 50 centimetres have been divided into quarter-sheets (40 by 25 centim.). This transformation was effected in the years 1889-1898, and he who wishes to possess a complete representation of France in this 1889 type must purchase 965 quarter-sheets, some of which are full, while others cover a part of the frontier.

It would be interesting to devote a few pages to the curious history of the map on the scale of 1:80,000, and I may be able to do this at a later day. For the present it will suffice to note that, the insufficiency of the map having been recognized by the Central Commission on Geographic Work, the Geographical Service of the Army began in 1897 an amplification on a scale of 1:50,000; a mere enlargement of the other, but none the less useful, and a provisional solution, waiting upon the decision of the Parliament in favour of a map on a large scale, the necessity of which becomes more and more marked, and the appropriation of the funds for the enterprise.

By the side of this enlarged map, work upon which proceeds only in the absence of more pressing duties, the Geographical Service possesses several reductions of the same map, each offering its own interest. One is the chorographical map of France on a scale

of 1:200,000, in 82 sheets, giving the position of administrative centres, including the communes, the hamlets, the remarkable places, the roads fit for vehicles at all times and those irregularly kept, when they are of importance to be known. Another is the map on a scale of 1:320,000, in 33 sheets, a veritable communal map of the country, which shows only the principal routes of communication and the administrative centres down to the chief places of the communes. In this the surface forms have been generalised so as to be in accord with the scale. Finally, there is the map of French railways, on a scale of 1:800,000 (in 4 sheets), which has taken the place since 1895 of the one at 1:1,250,000, become unserviceable by reason of the increasingly complicated network of lines. This map is made to keep pace with the opening of new roads.

The details relating to each one of these maps published by the Geographical Service of the Army will be found in the remarkable historical work on the *Carte de France de 1750 à 1898*, published three years ago by Col. Berthaut, head of the Cartographical Section. Nor does the Geographical Service confine itself to the study and the cartographical representation of the mother country; its activity extends to the French colonies, and, thanks to it, our territories of north-western Africa are already provided with a number of excellent topographical maps. First may be named the Topographical Map of Algeria, on a scale of 1:50,000. The first sheets appeared in 1884, and about 150 are now on sale, each measuring 64 x 40 centimetres. Next comes the Chorographical Map of Algeria, on a scale of 1:200,000, similar in design to the Map of France, on the same scale. Thirty sheets of this have been brought out since 1890. Lastly, there are six sheets of a Map of Algeria, on a scale of 1:800,000, which, based at first upon the itineraries of the expeditionary columns, was completely reconstructed in 1893, and is now established in great part upon regular surveys. It is kept up in accordance with the latest topographical work, and forms the basis of a march Map of Algeria, also on the scale of 1:800,000.

There are corresponding maps for Tunisia, the two countries belonging to the same natural region, and the Tunisian map being a natural prolongation of the Algerian.

Between 1882 and 1887 there was made, on a scale of 1:200,000, a map to answer the first requirements of the French occupation; but, with the progress of colonisation, this soon became insufficient, and in 1888, by an agreement between the French Government and that of the Bey, the Geographical Service was charged with the execution of the regular map of the Regency, on a scale of 1:40,000,

publication to be made on the scale of 1:50,000. To secure greater rapidity of execution a new agreement in 1895 limited the surveys for the 1:40,000 to the north of Tunisia, the Sahel and the environs of certain cities (Kef, Sfax, Gafsa, Gabes, and Ksar Medenin); the rest of the territory to be on the 1:80,000, and for publication on 1:100,000. The operations on the ground are now carried on simultaneously on the two scales of 1:40,000 and 1:80,000; more than 50 sheets at 1:50,000 are surveyed or finished and on sale; but the publication of the map at 1:100,000 has only just begun. In fact, the map of Tunisia, on the scale of 1:800,000 (the prolongation of the Algerian on the same scale), is the only one up to the present date; it is a reduction of the provisional map at 1:200,000 and of the regular surveys made since 1888, and it is regularly corrected by the most recent topographical operations.

Another work which does great honour to the Geographical Service of the Army is the map of Africa, on the scale of 1:2,000,000, in 63 sheets, drawn in 1875-1890 by the *Chef de bataillon* of Engineers de Lannoy de Bissy, and continued since 1891 by Capt. Rouby. Based on the information contained in geographical collections and in the reports of travel, this map is the result of comparison and co-ordination of the maps on different scales made to show the explorations, as well as of manuscript and unpublished originals, and it is constantly corrected and kept up in accordance with new discoveries.

Of many other important maps in process of execution by the Geographical Service on the uniform scale of 1:1,000,000 may be mentioned those of Asiatic Turkey (in 12 sheets), of Asia (the sheets of the Gulf of Pechili, Korea, and part of Japan), and of America (the first twelve sheets relate to a portion of the Antilles, the scene of the principal events of the Spanish-American War). We shall undoubtedly have to return at a later period to some of these productions, conceived on the same plan.

So far as relates to the doings of our travellers or precise information concerning their scientific work, the past two months are somewhat scantily furnished.

Nothing very certain is known of the explorations in progress, and most of the information received concerns expeditions already terminated. For instance, M. A. Chevalier, known for his interesting botanical explorations in the French Sudan, has communicated to the Academy of Sciences certain curious facts which seem to point to the recent immersion of the Sahara (the presence in the neighbourhood of Timbuktu of *Marginella Egouen* and *Columbella*

mercatoria, essentially marine forms still living on the coast of Senegambia). These are facts to be associated with the presence of a fossil sea-urchin at Zau Saghair,* and they call attention to a much-disputed question, which further discoveries will no doubt enable us to answer.

Capt. Lenfant, commanding the flotilla on the Lower Niger, has sent to the Société de Géographie precise information concerning the freshets of the river and the geology of the districts which he has visited, and M. Georges Thomann, Assistant Administrator of the Colonies, has furnished in the *Bulletin* of the Comité de l'Afrique Française an account, less clear than it might be, but really new, of the Sassandra, on the Ivory Coast. In Equatorial Africa the reconnaissances of Messrs. Bobichon and Superville have extended the domain of geography, and the latter, in his exploration of the Kotto, has shown that the conditions of this river are analogous to those of the Mbomu, and that it may be navigated without danger, even at the stage of low water. In the same region Lieut. Bos, Administrator of the circle of N'Sakkara, has executed an interesting itinerary and surveyed more than 1350 kilometres, a good part of it in unknown territory. With the *Bulletin's* information concerning the countries visited by these two travellers may be compared the excellent studies of Dr. Cureau on the Zandé plateaux. His two articles in the *Revue générale des Sciences Pures et Appliquées* are, in fact, a commentary on his fine map published in 1900 (15 Oct.) in *La Géographie*. It is also in *La Géographie* that Lieut. A. H. Dyé has begun to publish the list of geographical positions in Central Africa astronomically determined by the Marchand Mission.

Attention may be called to Capt. Lemaire's memoir on the Grottoes and the Troglodytes of the Katanga.†

Another interesting publication in the October number of *La Géographie* is the map of M. Hugues Le Roux's itinerary from Addis-Abeba to the Blue Nile by way of the Wallaga country. Menelik, King of Kings, certifies in an official document that M. Hugues Le Roux is the first European to behold the confluence of the Abai Nile with the Didessa. Extracts from the explorer's note-book form a commentary on the map, which is drawn by M. V. Huot on a scale of 1:1,000,000.

*It is essential to correct an error on p. 286 of the BULLETIN. Col. Monteil found at Zau Saghair not a fossil bear, but a sea-urchin; a mistake made in reading the French word *oursin* for *oursin*.

† Noticed in the GEOGRAPHICAL RECORD.

A recent mail from Madagascar brings news of a journey performed by M. Guillaume Grandidier in the south of the island, from Fort Dauphin to Tuléar* by Tsiombé, on the Manambovo, to Faux Cap and Cape St. Mary. From Tuléar the young traveller made his way by land to Lake Tsimanampetsotsa, discovered in 1868 by M. Alfred Grandidier, and completed its circuit. Thence he pushed as far to the north as the Mangoka, and he proposes, after making palæontological researches at various points, to return to Fort Dauphin by crossing the southern part of the island by a different route. It may be affirmed that this journey is rich in new information and in important corrections, passing, as the explorer did, through a country imperfectly known, and in some places even totally unknown. He brings back, besides valuable collections of natural history, a map of his route on a scale of 1:200,000. Other contributions to a more exact knowledge of southern Madagascar are found in the monographs brought out by the *Revue de Madagascar*, the periodical which now receives the articles formerly issued in the quarterly *Notes, Reconnaissances et Explorations*, now no longer published. A paper to be read is the excellent General Considerations on the Climatology of the Fort Dauphin District by Dr. Decorse, who resides there, and is well acquainted with the region.

Among the most important books published in the last two months must be counted the *Comptes Rendus* of the Eighth Session of the International Geological Congress; the two parts containing not less than 1314 pages of text and 22 separate plates. Most of the articles, naturally, are on geological subjects, such as palæontological stratigraphy, petrography, etc.; but others have interest and value for geographers. Among these memoirs, accompanied by new maps, are the Geological Sketch of the Sinaïtic Peninsula, by Mr. W. F. Hume; maps of the Desert in Eastern Egypt, by Messrs. Barron and Hume; the map of the Principal Depressions or Oases of the Libyan Desert, by Mr. H. J. L. Beadnell; and a Geological Sketch of Madagascar, by M. Marcelin Boule, on a scale of 1:6,000,000. The volumes abound in facts; it is only to be regretted that some communications (that of M. G. B. M. Flamand, on the Geology of Southern Algeria, and that of M. Arctowski, on the Glaciers and the Geology of the Lands discovered by the Belgian Antarctic Expedition) are so briefly summarised, and that the account of the numerous excursions, thirty-five and more, organized in France by the Committee, is made so short. It is true that the remarkable guide-book, published before the Congress under the title of

* The official spelling is *Tuléar*.

Guide Géologique de la France, furnishes for most of the places visited by members of the Congress very precious information, and constitutes a working instrument of the first order for geographers as well as for geologists; none the less, it might have been well to give more extended notices of the discussions which took place on the spot. In this way the report on the excursions would have formed a very useful complement of the guide-book itself.

One of the points visited during the Congress of 1900 was the Quaternary volcano of Gravenoire, with its cone in the form of a cupola covered with pines and beeches, and rising about two miles to the south-west of Clermont-Ferrand, more than 1300 feet above the Limagne. An excellent monograph on this volcano, by M. Glangeaud, appears in the *Bulletin des Services de la Carte Géologique de la France*. M. Glangeaud has proved that the volcano was situated on a fault (the western fault of the Limagne), which brought the Tertiary strata of the Limagne against the crystalline rocks that constitute the base of the chain of the Puys, and that the smaller volcanoes in the neighbourhood of Beaumont were established on parallel faults. Between these volcanoes and those in Iceland, described by von Keilhack and Thoroddsen, M. Glangeaud has noted very interesting points of comparison.

M. Marcel Monnier is not only a tourist who knows how to observe and to describe countries and peoples. His surveys of routes made during his travels in Asia, in the years 1895-1898, possess such merit that the Société de Géographie, with the aid of the Ministry of Public Instruction, has undertaken to publish them, and there has just appeared, under the title of *Itinéraires à travers l'Asie*, an atlas of 28 plates, drawn by M. J. Hansen from M. Monnier's surveys with the compass. Nineteen of these plates, on a scale of 1:150,000, relate to Korea and China; the others, on a scale of 1:750,000, show the traveller's route across Mongolia, the Altai, the Kirghiz steppe, Turkistan, Persia, and Asia Minor. A volume of substantial notices, illustrated by excellent photographs, adds to the interest of this fine publication, in which M. Marcel Monnier appears under a different aspect from that familiar to readers of the first two volumes of the *Tour de l'Asie*.

Few books are brought out between the vacation and the New Year, and only one calls for mention in this place: M. Henri Vignaud's work, *La Lettre et La Carte de Toscanelli sur la route des Indes par l'Ouest*. In this the author takes up and develops the theory which he put forward last year at the XIIth Session of the International Congress of Americanists. To him everything wears

a dubious aspect in the supposed correspondence of Toscanelli with Fernam Martins at first, and afterwards with Christopher Columbus. Bartholomew Columbus seems to have been the author of an imposition, by which the Admiral never profited, nor tried to profit; and the real prime mover in the discovery of America would appear to be not the celebrated Florentine astronomer, but a poor seaman who died in obscurity without leaving even a name to posterity. These are M. Vignaud's principal conclusions. His work will soon appear in English, and he announces that he will before long take up, in a work on the Precursors of Bartholomew Diaz and Christopher Columbus, the history of Alonso Sanchez, of Huelva, who was, perhaps, the unknown pilot that instructed Columbus. It must be admitted, in any case, that the thesis is very alluring, and that M. Vignaud's book, which is solidly constructed and fortified with documents, contains rectifications and information which the historians of geography and of Columbus must henceforth take into account.

Mention must be made, in closing, of the last annual Geographical Bibliography published by the *Annales de Géographie*. In this excellent bibliography, which is under the charge of M. Louis Raveneau, the best geographical productions of the preceding year are classified and succinctly analyzed. This tenth issue, covering the year 1900, is particularly interesting, because it registers the most important geographical books and articles called out by the Universal Exposition, and is, therefore, of equal utility with the solid and noteworthy articles of Messrs. de Margerie and Raveneau on Cartography at the Universal Exposition of 1900.

HENRI FROIDEVAUX.